

Claims

We claim:

Sub A<sup>1</sup> 5  
Sub B<sup>1</sup> 10  
Sub C<sup>1</sup> 15  
Sub D<sup>1</sup> 20  
Sub E<sup>1</sup> 25  
Sub F<sup>1</sup> 30

1. An optical fiber laser comprising:  
a laser cavity;  
a pump source; and  
a combiner having a first side, a second side and an input port, wherein an output of the pump source is operatively coupled to the input port of the combiner, and the combiner is coupled at its first and second sides within the laser cavity.
- 2.<sup>13</sup> The optical fiber laser as recited in claim 1, wherein the lasing medium comprises a cladding pumped fiber.
- 3.<sup>14</sup> The optical fiber laser as recited in claim 2, wherein the cladding pumped fiber includes a rare earth doped core.
- 4.<sup>15</sup> The optical fiber laser as recited in claim 1, wherein the laser cavity comprises a lasing medium and first and second reflector devices.
5. The optical fiber laser as recited in claim 4, wherein at least one of the first and second reflector devices comprises a fiber Bragg grating.
- 6.<sup>16</sup> The optical fiber laser as recited in claim 5, wherein the fiber Bragg grating has a high index coating formed thereon.
7. The optical fiber laser as recited in claim 4, wherein the first and second reflective devices comprise at least one of a dielectric film mirror, an interference filter, a broad metal mirror, and a polished fiber end.
- 8.<sup>17</sup> The optical fiber laser as recited in claim 1, wherein the lasing medium comprises a single-mode fiber.

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9.<sup>18</sup> The optical fiber laser as recited in claim 1, wherein the pump source comprises a multi-mode pump source.

10. The optical fiber laser as recited in claim 1, wherein the input port is associated with  
5 one of the first and second sides of the combiner.

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11. The optical fiber laser as recited in claim 1, wherein the optical fiber laser is configured for bidirectional pumping of the laser cavity.

*METHOD OF OPERATING A LASER*

12. A method for combining laser light with pump light in an optical fiber laser device, the method comprising the steps of:

positioning a pump combiner <sup>112</sup> within a laser cavity; and  
coupling a pump source for exciting lasing medium to an input of the combiner.

13. The method as recited in claim 12, wherein the lasing medium comprises a cladding pumped laser fiber.

14. The method as recited in claim 13, wherein the cladding pumped laser fiber includes a rare earth doped core.

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15. The method as recited in claim 12, wherein the laser cavity comprises first and second reflector devices coupled to respective first and second ends of the lasing medium.

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16. The method as recited in claim 15, wherein at least one of the first and second reflector devices has a low index coating formed thereon.

17. The method as recited in claim 12, wherein the lasing medium comprises a single-mode laser fiber.

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18. The method as recited in claim 12, wherein the pump source comprises a multi-mode pump source.